

# Math 113–004: Calculus I

Spring 2018: TR 4:30pm – 6:20pm, Robinson B104

**Instructor:** Dr. Daniel Anderson

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**Office Hours:** TR 3:00PM–4:00PM and by appointment.

**Text:** *Calculus: Early Transcendentals*, Second Edition, by Briggs & Cochran

**Prerequisites:** Sufficient recall of algebra and trigonometry is required. Successful completion of Math Placement Test or a grade of C or better in MATH 105.

**Course Goals:** To understand and be able to make use of the concepts of limits, derivatives and integrals of functions (e.g. polynomial, rational, exponential, logarithmic, trigonometric) and to understand the relationships between limits, derivatives and integrals.

**Exams:** There will be two midterm exams. Midterm exam dates and topics listed below are tentative and will be confirmed in class. You are responsible for being aware of any such changes announced in class. *Makeup exams will not be given.* In the event that one exam is missed and (1) a valid, documented excuse is given in writing to the instructor at the time of the absence and (2) the student provides sufficient evidence to the instructor that he/she is keeping up with the topics in the course, the final exam score will count in place of the missed exam. The instructor will determine whether an excuse is valid. Without a valid documented excuse given at the time of the exam, a missed exam will count as a zero. If more than one midterm exam is missed, that situation will be dealt with on an individual basis.

**Ungraded Homework:** Problem sets from the sections in the textbook will be assigned regularly. Although these will not be collected, success in this class depends strongly on completing and understanding these problems. Working together on ungraded homework is encouraged but each student is ultimately responsible for understanding the material.

**Graded Homework:** There will be two graded assignments that will require the use of the mathematical software package Mathematica. Specific instructions will follow.

**Quizzes:** There will be weekly quizzes with some exceptions as will be explained in class. *No makeup quizzes will be given.* If you cannot make it to class when the quiz is given, you will not be able to receive credit for the quiz. Your two lowest quiz grades will be dropped.

**Grading Policy:** Homework (Mathematica Assignments) = 10%

Quizzes = 20%

Two midterm exams = 45% (22.5% each)

Final Exam = 25%

In general, 90%–100% = A, 80%–89% = B, 70%–79% = C, 60%–69% = D, below 60% = F. Plus and minus grades will be approximately 2 or 3 percentage points above or below these

boundaries (e.g. 88% would correspond to a B+). I reserve the right to lower the curve, but will not raise the curve.

**Important Dates:** Monday, February 12, last day to drop class without tuition penalty

Monday, March 12 – Sunday, March 18, Spring Break

Thursday, May 3 (our last day of classes)

Tuesday, May 15, 4:30pm–7:15pm (**Final Exam - NOT YET CONFIRMED - S**

**Final Exam:** The final exam will be an in-class cumulative exam and must be taken at the scheduled time. Exceptions are allowed only with a Dean's permission, by University rules.

**Online** class information, including assigned homework, will be posted periodically at

<http://math.gmu.edu/~dmanders/WEBDAN/math113.spring18.html>

**MyMathLab:** Students may choose to make use of online software associated with the textbook. Access to this software is at an additional cost above the textbook cost and so is not required. However, those that do purchase this will have access to online practice problems. Further details will be provided.

**Recitation:** There is a recitation section with this course run by a graduate teaching assistant, offered at three different times each week. Quizzes will be given periodically during the recitation. You should plan to attend your particular recitation section each week.

**Calculators:** Calculators will be treated as devices to assist in *learning and understanding* calculus but not as a replacement for *knowing and remembering* calculus. No calculators will be allowed for use on either quizzes or exams. The term 'calculators' here refers to any device such as standard scientific and graphing calculators but also smartphones, ipads, laptops, etc. No such devices will be allowed on your table/desk while taking quizzes and exams. Do not plan to use these for keeping track of time during quizzes or exams.

**Other Notes:** 1. Doing the assigned homework (graded and ungraded) is critically important to success in this class. I expect a MINIMUM of two hours per week in work outside of class for every one hour of class. 2. Please silence cell phones, etc. during class. The interruptions caused by these are distracting and will not be tolerated. Laptop computers in class are allowed if they are being used exclusively for calculus. Students using laptops for other purposes will be asked to turn off their laptops or leave the classroom.

**Honor Code:** It is expected that each student in this class will conduct himself or herself within the guidelines of the Honor Code. All academic work should be done with the level of honesty and integrity that this University demands. Anyone caught cheating during a quiz, exam or on any other material submitted for grade will be sent to the University Honor Committee for formal resolution to the situation. The use of cell phones for any purpose during a quiz or an exam will be considered an honor code violation. The most likely recommendation given by the professor to the Honor Committee is failure of the class (not just the specific quiz, exam, etc.) if the student is found guilty of violating the Honor Code.

**Course Outline (Tentative):**

Sections	Topics
Chapter 1 (1.1-1.4)	Functions; Exponentials; Logarithms; Trig Functions; Inverse Functions
Chapter 2 (2.1-2.7)	Limit of a Function; Infinite Limits; Limits at Infinity; Continuous and Discontinuous Functions;
<b>EXAM 1</b>	<b>(Thursday, February 15)</b>
Chapter 3 (3.1-3.11)	Derivatives of Polynomials, Exponential, Trigonometric, Logarithmic Functions; Product Rule; Quotient Rule; Chain Rule; Implicit Differentiation; Rates of Change, Related Rates
Chapter 4 (4.1-4.9)	Maxima and Minima; Optimization; Mean Value Theorem; Derivatives and Graphs; L'Hopital's Rule; Indeterminate Forms; Antiderivatives
<b>EXAM 2</b>	<b>(Thursday, April 5)</b>
Chapter 5 (5.1-5.5)	Area and Distance; Definite Integral; Indefinite Integral; Fundamental Theorem of Calculus; Substitution
<b>FINAL EXAM</b>	<i>Chapters 1-5</i> <b>(Tuesday, May 15, 4:30-7:15pm)</b> <b>(DATE AND TIME NOT YET CONFIRMED!)</b>

Ungraded Homework (Calculus: Early Transcendentals, Briggs and Cochran - Ed. 2)

- (1.1): 1-10,11,12,13,15,25,27,29,31,33,35,39,55,81  
(1.2): 5-10,11,12,15,19,25,27,44,76  
(1.3): 1-10,11,15,16,21,22, 26,29,31,33,35,39,40, 41–46, 53,55,72,79  
(1.4): 1-14,15,16,17,47,48,49,57–60,92,93
- (2.1): 1-6,7,11  
(2.2): 1-6,7,10,23,28  
(2.3): 1-10,11,17,21,23,25,27,36,39,45,46,55,68  
(2.4): 1-6,7,10,15,17,19,21,23,25,31,33,44  
(2.5): 1-8,9,11,13,15,17, 25,27,29,31,33,41,45,46,47,48,49,50,52–57,66  
(2.6): 1-8,9,12,13,15,16,18,23,25,27,29,40,41,59,60,93  
(2.7): 1-8,9,10,19,21,33
- (3.1): 1-8,9,10,11,15,16,17,18,27,28,29,37,38,41,47,48  
(3.2): 1-4,5,6,7,8,9,10,11,12,13,15,17,18,20  
(3.3): 1-6,7,8,9,16,17,18,19,21,23,25,35,36,39,42,43,44,45,46,47,54,55,71  
(3.4): 1-6,7,8,10,13,14,15,16,17,18,19,20,21,23,27,29,30,31,33,37,38,43,44,57,58,62,63,72  
(3.5): 1-6,7,8,9,10,15,17,18,19,21,29,30,31,49,50,51,56,57,58,68,72  
(3.6): 1-8,9,11,12,20,34  
(3.7): 1-6,7,8,12,14,17,19,20,21,22,29,31,45,46,70,71  
(3.8): 1-4,5,7,8,11,12,13,14,15,16,21,22,25,27,28,32,33,35,37,38,39,40  
(3.9): 1-8,9,11,12,13,17,18,19,23,24,26,27,28,31,32,37,41,45,47,51,55,59,60  
(3.10): 1-6,7-12,13,14,29,31,32,35,36,37,38  
(3.11): 1-4,5,9,13,14,22,23,27
- (4.1): 1-10,11,12,13,14,15,16,17,18,19,20,23,24,25,31,32,33,37,38,39,52,53  
(4.2): 1-10,11,12,15,16,17,18,19,27,28,29,31,40,41,43,44,47,49,53,54,57,59,71,72,87,88  
(4.3): 1-6,7,9,10,15,17  
(4.4): 1-4,5,6,14,16,17,31  
(4.5): 1-6,13,14,15  
(4.6): 1-6,7,8,15,17,19,21,23,32,33,34  
(4.7): 1-12,13,15,17,19,25,27,32,37,39,41,43,45,46,52,55,56,69,70,85,86,87  
(4.9): 1-10,11-18,23-28,37,38,39,47,48,49,50,67,68,69,101,110,111
- (5.1): 1-8,9,17,18,19,20,40,41,42,65  
(5.2): 1-10,11,25,26,33-36,37,38,41,72,73  
(5.3): 1-10,11,13,19,23,24,25,26,29-33,61–64,69  
(5.4): 1-6,7,9,11,21,22  
(5.5): 1-8,9-12,13-16,17,19,21,23,25,39-42,61